

We claim:

- Subt A6
1. A low-residual-solvent excipient which has residual solvent of less than 3000 ppm; wherein said excipient comprises water absorbing property.
 2. The low-residual-solvent excipient according to claim 1, wherein said low-residual-solvent excipient is a polysaccharide based material.
 3. The low-residual-solvent excipient according to claim 1, wherein said polysaccharide based material is one selected from the group consisting of starch based material, cellulose based material, chitin based material, sugar, Arabic gum, and Guar gum.
 4. The low-residual-solvent excipient according to claim 3, wherein said starch based material is one selected from the group consisting of starch, amylose, amylopectin, gelatin, starch 1500, and sodium starch glycolate.
 5. The low-residual-solvent excipient according to claim 3, wherein said cellulose based material is one selected from the group consisting of cellulose, microcrystalline cellulose, hydroxypropyl cellulose, carboxymethyl cellulose, croscarmellose, and hydroxypropyl-methyl-cellulose.
 6. The low-residual-solvent excipient according to claim 3, wherein said chitin-based material is chitosan.
 7. The low-residual-solvent excipient according to claim 1, wherein said residual solvent is at least one selected from the group consisting of methanol, ethanol, isopropanol, and acetone.
- Subt A7
- 10
- 15
- 20

Subt
A8

8. The low-residual-solvent excipient according to claim 2, further comprising a water-absorbing radical.

9. The low-residual-solvent excipient according to claim 8, wherein said water absorbing radical is a $-R-COO^-A^+$ radical, wherein R is a lower alkyl group having 1-4 carbon atoms; wherein A^+ is Na^+ , K^+ or Ca^{++} .

10. The low-residual-solvent excipient according to claim 9, wherein said $(-R-COO^-A^+)$ radical is an acetate sodium radical $(-CH_2COONa)$.

11. The low-residual-solvent excipient according to claim 9, wherein said water-absorbing radical is attached to a carbinol group $(-CH_2OH)$ of said polysaccharide to form a $(-CH_2-O-RCOONa)$ linkage.

12. The low-residual-solvent excipient according to claim 1, wherein said low-residual-solvent excipient is used in at least one selected from the group consisting of pharmaceuticals, fish foods, plant growth regulators, pesticides and herbicides.

13. A method for producing the low-residual-solvent excipient according to claim 1, comprising:

mixing a solvent/water solution with said low-residual-solvent excipient to form a solvent/water/excipient mixture;

removing said solvent by filtering said solvent/water/excipient mixture;

drying said retained excipient to produce said low-residual-solvent excipient.

14. The method according to claim 13, wherein said solvent/water solution is one selected from the group consisting of isopropanol/water, acetone/water, and methanol/water.

15. The method according to claim 14, wherein said isopropanol/water solution has 75-95% by volume of isopropanol and 5-25% by volume of water.

16. The method according to claim 14, wherein said acetone/water solution has 65-95% by volume of acetone and 5-35% by volume of water.

17. The method according to claim 14, wherein said methanol/water solution has 60-85% by volume of methanol and 15-40% by volume of water.

18. The method according to claim 13, wherein said low-residual-solvent excipient is a polysaccharide based material.

19. The method according to claim 13, wherein said solvent/water solution and said low-residual-solvent excipient is mixed at about 20 to 30°C and with high-speed agitation.

20. The method according to claim 19, wherein said high speed agitation is at least at 90 rpm.

21. The method according to claim 13, further comprising a step of: attaching a water-absorbing radical to said low-residual-solvent excipient before said low-residual-solvent excipient mixes with said solvent/water solution.

~~22~~
21. The method according to claim 20, wherein said water absorbing radical is a $(-RCOO^-A^+)$ radical, wherein R is a lower alkyl group having 1-4 carbon atoms; wherein A^+ is Na^+ , K^+ or Ca^{++} .

~~23~~
22. The method according to claim 21, wherein said water absorbing radical is an acetate sodium radical $(-CH_2COONa)$.

~~24~~
23. The method according to claim 21, wherein said $(-RCOO^-A^+)$ radical is attached to a carbinol $(-CH_2OH)$ group of said low-residual-solvent excipient to form a $(-CH_2-O-R-COO^-A^+)$ linkage.

~~25~~
24. The method according to claim 23, wherein said $(-CH_2-O-R-COO^-A^+)$ linkage is produced by mixing said polysaccharide based material with methanol, sodium hydroxide, and a $(Cl-R-COO^-A^+)$ at about $100^\circ C$ for about 10 hours.

~~26~~
25. The method according to claim 24, wherein said $(Cl-R-COO^-A^+)$ is a monochloroacetate sodium $(Cl-CH_2-COONa)$.

~~27~~
26. The method according to claim 18, wherein said polysaccharide based material is one selected from the group consisting of potato starch, corn starch, amylose, amylopectin, gelatin, starch 1500, sodium starch glycolate, cellulose, microcrystalline cellulose, hydroxypropyl cellulose, carboxymethyl cellulose, croscarmellose, hydroxypropyl-methyl-cellulose, and chitosan.

add
A''

add
B'

Sub A10